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THE WORSHIP AND FOLK-LORE OF METEORITES.¹

FEW natural objects have more generally been worshipped by the human race than meteorites. From the dawn of history to the present there has probably never been a day when there was not being carried on somewhere upon the globe the worship of a "sky stone."

That savage and barbarous people should do this does not seem strange when one considers the extraordinary phenomena of dazzling light and violent sounds which usually accompany the fall of a meteorite.

But when one finds that similar worship was carried on by the Greeks and Romans, and even probably forms a part of the Mohammedan ritual of the present day, it is evident that the worship of these bodies takes a deeper hold upon mankind than that of most other material things, and makes an inquiry into the nature and causes of such worship seem desirable. Certainly for scientific purposes a catalogue made as complete as possible of the cases where such worship has been carried on is needed. Instances of the worship of meteorites among ancient peoples, especially the Greeks and Romans, have been carefully collected and exhaustively studied by Professor H. A. Newton, the results of his study having been published in the "*American Journal of Science*" soon after his death.²

There are many instances, however, not enumerated by Professor Newton, which should be added to the list. The writer's endeavor will be therefore to enumerate as many well-authenticated cases as he has been able to discover, of meteorites which have been worshipped, or which have been the subjects of legends or folk-lore, and to draw any conclusions from the collected records which may seem justifiable.

Ignoring the hazy records of the Chinese and Arabians in regard to the worship of meteorites as being too indefinite for study, there may be first mentioned a stone whose worship, beginning at a very early period, has endured to the present day. This is the meteorite of the *Kaaba at Mecca*.³ The worship of this stone by Arabian tribes is first spoken of by Greek writers of early times. So firmly had its worship become established when the Arabs became converts to Mohammedanism, and Mohammed took Mecca, and destroyed the 360 idols within the temple, that the great prophet dared

¹ Revised from a paper read before the Chicago Academy of Sciences, March 28, 1898.

² *Amer. Jour. Sci.* 4th ser. vol. iii. p. 1.

³ Fletcher, *An Introduction to the Study of Meteorites*, 1894, p. 18; also Newton, *l. c.* p. 4.

not or cared not to abolish it. Saluting the idol with his staff, he made the sevenfold circuit of the temple court, and returned and kissed it. Having thus sanctioned its worship, the Mohammedans have regarded it with the utmost reverence ever since. It is built into the corner of the Kaaba or temple, and toward it each devout Moslem is bidden to look five times a day as he prays. Its name is The Right Hand of God on Earth. By one tradition it is said to have dropped from Heaven with Adam, by another to have been given by Gabriel to Abraham to attest his divinity, and by another it is said that when Abraham was reconstructing the Kaaba that had been destroyed by the deluge, he sent his son Ishmael for a stone to put in its corner, and Gabriel met Ishmael, and gave him this stone. By the tradition the stone was originally transparent hyacinth, but became black through being kissed by a sinner. In the day of judgment, it is said, it will witness in favor of all those who have touched it with sincere hearts, and will be endowed with sight and speech. That this wonderful stone is a meteorite has not been positively proved by observation, since of course no one has ever been able to obtain a fragment of it for study. There can, however, be little doubt that it is a meteorite. Not only did it according to tradition fall from heaven, but it is described by travellers as having a black color and basaltic character, qualities which correspond exactly to those of meteoric stones. Coming next to the instances of meteorites worshipped by Greeks and Romans, it will be found difficult to separate the imaginary from the real. Yet a few cases may be cited with comparative assurance.

*Venus of Paphos, Island of Cyprus.*¹ — This was one of many "heaven descended images," and is described as a rude triangular stone.

*The Statue of Ceres.*² — This is referred to by Cicero in his oration against Verres as being "not made by hands" and "fallen from the skies."

*The Earliest Image of Pallas at Athens.*³ — Tradition gives this a like origin with that just quoted.

*The Stone of Delphi.*⁴ — This is described by Pausanias as being a stone of moderate size "which they anointed every day, and covered during every festival with new shorn wool." They are of the opinion respecting this stone, he says, "that it was the one given by Cybele to Saturn to swallow as a substitute for the infant Jupiter, which Saturn after swallowing vomited out on the earth."

*The Needle of Cybele.*⁵ — This meteoric stone attained great celeb-

¹ Fletcher, *l. c.* p. 18; Newton, *l. c.* p. 5.

² Newton, *l. c.* p. 6. ³ *Ibid.*

⁵ Fletcher, *l. c.* p. 18; Newton, *l. c.* p. 6.

⁴ *Ibid.*

urity and importance in Roman history, and was worshipped through long centuries as the image of Cybele. It was described as conical in shape and ending in a point; brown in color and looking like a piece of lava. It fell at some unknown early time near Pessinus on the border line between Phrygia and Galatia. The worship of Cybele being carried on there, the stone was set up and adored as her image. At the time when Hannibal was maintaining his army in Italy, and threatening the Roman state, a shower of stones occurred which alarmed the Romans as to their future, and caused them to consult the sibylline books as to what should be done. The response was that whenever a foreign enemy had carried war into Italy, he could be expelled and conquered if the Idæan mother (this meteoric stone) be brought from Pessinus to Rome. Accordingly with the greatest ceremony the stone was brought to Rome. A new ship was built to carry it, and it was received in the city with elaborate rites and festivals of many days' duration. Before another year had passed, Hannibal had been forced back to Africa. In gratitude for deliverance a temple was erected to Cybele. In it a silver statue of the goddess was placed, and the stone was made to serve as her head. For more than 500 years thereafter the stone was an object of public worship. In the course of time, however, the worship was discontinued, and the stone disappeared from view, probably, alas! never to be found again. It has been searched for most industriously by modern excavators, but no trace has ever been found of it except an account of its probable rejection. The chances of its ever being discovered seem now therefore exceedingly small.

Heliogabalus.¹ — This meteoric stone was worshipped in the time of Emperor Macrinus as the image of the Sun God. According to tradition, it fell from heaven, and is described as "a large stone rounded on the base, and gradually tapering upward to a sharp point; it is shaped like a cone. In color it is black, and they show certain small prominences and depressions in the stone." Such a description accords well with those of the peculiar features of a meteoric stone. The stone was first worshipped in Asia on the banks of the Orontes between Damascus and Antioch, a magnificent temple being built over it there. Macrinus, on becoming emperor, had the stone brought to Rome, where its worship was carried on with the most costly and elaborate ceremonies as long as he reigned. After his death, however, the worship was probably discontinued, as nothing more can be learned of the stone or of this form of worship.

The Image of Artemis at Ephesus.² — This image was the central

¹ Newton, *l. c.* p. 11.

² Fletcher, *l. c.* p. 18; Newton, *l. c.* p. 13.

object in the great temple at Ephesus, which was reckoned one of the seven wonders of the world. It was said to have fallen from heaven, and its name, Diipetes, signified "fallen from the sky." While the copies which were made of it and widely circulated during the first century are not representations of a stone, they are, in the opinion of Professor Newton, idealized forms of what was originally a stone having the characters of a meteorite.

In addition to the above seemingly well-defined instances of the worship of meteorites by the Greeks and Romans, there are others indicated by coins known to have been struck by different rulers. Many of these coins bear the figure of a stone mounted as if on a shrine, while the accompanying inscription tells of the fall. The fact that the occurrence was commemorated by a coin indicates that the object was considered one of ominous import. The Imperial Museum at Vienna possesses much the largest collection of these coins known. The coins there shown tell of the fall of meteorites in Macedonia, Attuda, Cyprus, Cyrrhus, Emisa, Mallas, Perga, Pola, Sardis, Pierian Seleucia, Sidon, Synnada, Tripolis, and Tyre.¹ They were struck by the following rulers or their associates: Philip II., Alexander III., Augustus, Caligula, Vespasian, Trajan, Antoninus Pius, Marcus Aurelius, Lucius Verus, Commodus, Septimius Severus, Julia Domna, Caracalla, Elagabalus, Annia Faustina, Mæsa, Julia Soæmias, Alexander Severus, Maximinus, Gordianus Pius, Tranquillina, Philippus pater, Phillippus filius, Valerian, Gallienus, Salonina, Aurelian, and Tacitus. It is to be hoped that the history of these individual coins will be some time carefully investigated.

Coming now to more modern times, many instances of meteorites held in reverence may be recorded in the Old World.

Durala, India. — Here a stone weighing about twenty-five pounds fell February 18, 1815. The natives believing it to be of heavenly origin procured means to have a special temple built over it,² but the East India Company took possession of the stone, and sent it to the British Museum, where it is now largely preserved.

*Saonlod, India.*³ — A shower of about forty stones fell here January 19, 1867. The terrified inhabitants of the village seeing in them the instruments of vengeance of an offended deity, gathered all the stones they could find, and having pounded them to powder, scattered them to the winds.

Nedagolla, India. — This meteoric iron fell January 23, 1870, with brilliant light and explosive sounds. The people of the village were much alarmed, carried the mass to their temple, and made *punja*

¹ *Annalen des k. k. Naturhist. Hofmuseums*, Wien, Bd. x. p. 236.

² Buchner, *Die Meteoriten in Sammlungen*, p. 36.

³ Flight, *A Chapter in the History of Meteorites*, p. 150.

(ceremonial worship) to it. Some time after it was taken possession of for the collections of the British Museum.

*Sabetmahmet, India.*¹—This stone was decked with flowers, anointed with ghee, and subjected to frequent ceremonial worship and coatings of sandal-wood powder. It was placed on a terrace constructed for it at the place where it struck the ground, and a subscription was made for the erection of a shrine.

*Ogi, Hizen, Japan.*²—Two stones which fell here, according to one account, December 10, 1744, were used for more than 150 years as offerings annually made in the temple in Ogi to Shokujo on the festival of that goddess the 7th day of the 7th month. The belief among the Japanese was that the stones had fallen from the shores of the Silver River, Heavenly River, or Milky Way, after they had been used by the goddess as weights to steady her loom. One of these stones is now largely preserved in the British Museum.

*Kesen, Iwate, Japan.*³—A meteorite which fell here in 1850 was preserved in a temple many years, and worshipped as an idol. Portions of it are now to be found in many collections.

Krasnojarsk, Siberia.—Here a mass of iron weighing 1500 pounds was long in place. The first European to visit it was the traveller Pallas, in 1771. He reported that the mass was regarded by the Tartars of the vicinity as "a holy thing fallen from heaven."⁴ Examination of the mass made since Pallas's day proves it beyond question to be meteoric.

Ensisheim, Alsace, Germany.—Here a stone weighing about 300 pounds fell November 16, 1492.

The Emperor Maximilian had the stone brought to the neighboring castle, and a council of state was held to consider what message from heaven the stone fall had brought them. As a result the stone was hung up in the church with an appropriate legend, and with the strictest command that it should ever remain there intact. It was held to be an omen of import in the contest then in progress in France and in the contest impending with the Turks.⁵ At the time of the French Revolution it was taken down by iconoclasts, and broken into a number of pieces. One large piece, however, is still preserved in the Town Hall of Ensisheim.

*Duruma, East Africa.*⁶—This stone weighing about a pound fell March 6, 1853. It was picked up by some shepherd boys, and of these some German missionaries tried to buy it. The barbarous tribe of Wanikas, however, hearing of the fall, took the stone to be

¹ *Records of the Geological Survey of India*, 1885, vol. xviii. p. 237.

² Flight, *l. c.* p. 166.

³ Brezina, *Ann. k. k. Naturhist. Hofmuseums*, Wien, Bd. x. p. 257.

⁴ Fletcher, *l. c.* p. 20. ⁵ Newton, *l. c.* p. 3. ⁶ Buchner, *l. c.* p. 86.

a god, obtained possession of it, and refused to part with it. They anointed it with oil, clothed it with apparel, and built for it a kind of temple. Three years later the wild Masai came down upon the Wanikas, burned their village, and killed large numbers of the people. The Wanikas thereupon concluded that their god was a poor protector, and, having lost all respect for it, gladly sold it to the missionaries. The stone is now to be seen in the collection of the Academy of Sciences of Munich.

In the New World several instances of worship of meteorites may be cited. The greatest antiquity is probably to be assigned to those worshipped by the mound-builders.

*Turner Mound, Hamilton County, Ohio.*¹ — Upon a brick altar in this mound were found several objects made of meteoric iron. They were accompanied by other ornamental objects, such as figurines, dishes, copper ornaments, and bones of deer and elk. All gave evidence of having been subjected to the action of fire, and this, together with their position upon the altar, indicates that all these objects were considered more or less sacred by the people who placed them there. A study of the peculiar features of the iron makes it very probable that it had been brought from Kansas by the aborigines, showing all the more plainly the high esteem in which it must have been held.

Hopewell Mound, Ross County, Ohio. — Here were also found, in connection with a skeleton upon an altar, part of a headdress, beads, and other ornaments all made of meteoric iron. As in the case just quoted, worship of these objects is indicated.

*Oktibbeha County, Mississippi.*² — A mass of what is probably meteoric iron was found in an Indian mound here.

Casas Grandes, Mexico. — An account of a mass of meteoric iron probably worshipped here by the aborigines is given as follows by Mr. M. Pierson, United States vice-consul at El Paso del Norte:³ "Some three or four years since a party of the inhabitants of the town of Casas Grandes, as a matter of curious speculation, commenced excavating in the old ruins there. One more fortunate than the others drifted into a large room, in the middle of which there appeared a kind of tomb made of adobe brick. Renewing his excavations, he found a large mass of meteoric iron in the middle of the tomb, carefully and curiously wrapped with a coarse kind of linen. Twenty-six yoke of oxen were mustered, and as many more strong log chains, and the meteorite was hauled to the town of Casas Grandes. It measured 2 feet 6 inches square, and is supposed to

¹ Kinnicut, *Rep. Peabody Museum*, 1884, p. 381.

² Taylor, *Proc. Acad. Phil.* 1857.

³ *Smithsonian Report* for 1873, p. 419.

weigh 5000 pounds." The present whereabouts of the mass are not known, unless a meteorite now in the collection of the United States National Museum be the one described by Mr. Pierson.

Wichita County, Texas. — A mass of meteoric iron first seen here by white men in 1836, and weighing 320 pounds, was an object of worship to the Comanche Indians. It was set up at a point where several trails met, and the Indians in passing by it were accustomed to deposit upon it offerings of beads, pipes, and tobacco.¹ Portions of the mass are now to be seen in several collections.

Charcas, Mexico. — This mass of meteoric iron weighing 1500 pounds was seen by Humboldt in the above place in 1811.² It was then, he states, built into the wall of a church (or churchyard), and was worshipped by women in the belief that they would thus be cured of sterility. The mass was brought in 1885 to Paris.

San Gregorio, Chihuahua, Mexico. — On this mass of meteoric iron weighing twelve tons, which lay in its original position until 1891, was cut in 1821 this inscription: —

"Solo Dios con su poder este fiero destruira
Pues en el mundo no habra
Quien lo pueda de hacer."

("Since no one in the world could make it, only God with his power this iron can destroy.") These words at least indicate that a sacred character was given the iron in the eyes of some one, though we have no evidence that any worship of the mass was ever carried on. The mass is now in the museum of the National School of Mines, City of Mexico.

FOLK-LORE OF METEORITES.

Under this head may be classed cases in which meteorites were the source of some legend or belief not involving worship. In these cases something of awe or reverence for the object is indicated, but not of so profound a nature as was felt where worship was carried on.

*Elbogen, Bohemia.*³ — Here a mass of meteoric iron weighing 200 pounds was preserved for centuries (and may still be seen) in the Town Hall. It is said to have fallen about the beginning of the fifteenth century. It was long invested by the people with an extraordinary character, and was known among them as the enchanted or bewitched burggrave (a burggrave being a court official). The popular tradition in regard to the mass was, that if at any time it were thrown into the castle fountain (which was twenty-two fathoms deep), it would come back to its former place. In 1742 the

¹ Mallet, *Am. Jour. Sci.* 3d ser. vol. xxviii. p. 285.

² Humboldt, *Essai politique*, vol. ii. p. 582.

³ Buchner, *l. c.* p. 151.

French, being in temporary control of the country, in mockery of the saying, threw the iron into the fountain. But it proved true to its reputation, for in 1776 the French rule being ended, the townspeople lifted it out of its pit, and set it back in the place to which tradition had said it would return.

The Gibbs Meteorite. — This is a mass of meteoric iron weighing 1690 pounds now in the Yale Museum. The first white man to see it was Captain Anthony Glass, who in 1808, when trading among the Pawnees in Texas, was shown the mass by the Indians. He states that they regarded the mass with great veneration, and attributed to it singular powers in the cure of diseases.¹

Nejed, Central Arabia. — The belief that meteorites are the solid substance of thunderbolts has been not uncommon, and is quite natural when one considers the phenomena attending their fall. One of the most interesting records of such a belief is found in a letter which accompanied the Nejed meteorite now in the British Museum : ² —

In the year 1282 after the death of Mahomed, when Mame Faisale Ben Saoode was governor and general-commander-in-chief of the Pilgrims, residing in a valley called Yakki, which is situated in Nagede, in Central Arabia, Schiekh Kalaph Ben Essah, who then resided in the above-named valley, came to Bushire, Persian Gulf, and brought a larger thunderbolt with him for me, and gave the undermentioned particulars concerning it.

In the spring of the year 1280, in the valley called Wadee Banee Khaled, in Nagede, Central Arabia, there occurred a great storm, thunder and lightning being particularly prevalent ; and during the storm an enormous thunderbolt fell from the heavens, accompanied by a dazzling light, similar to a large shooting star, and it imbedded itself deeply into the earth. During its fall the noise of its descent was terrific. I, Schiekh Kalaph Ben Essah, procured possession of it, and brought it to you, it being the largest that ever fell in the district of Nagede. These thunderbolts as a rule only weigh two or three pounds, and fall from time to time during tropical storms.

The above concludes the narrative of Schiekh Kalaph Ben Essah.

I myself saw in Africa four years after the above date a similar one, weighing 133 pounds, to that which Schiekh Kalaph Ben Essah brought to me, and the Sultan of Zanzibar, Sayde Mayede, obtained possession of it, and forwarded it to Europe for the purpose of having it converted into weapons. For this reason I have forwarded my thunderbolt to London (as when melted and made into weapons, they were of the most superior kind and temper), considering it one of the wonders of the world, and may be a benefit to science.

¹ *Amer. Jour. Sci.* 1st ser. vol. viii. p. 218.

² Fletcher, *Min. Mag.* vol. vii. p. 179.

The said Schiekh Kalaph Ben Essah, who brought me this thunderbolt, is still alive and under Turkish government control at Hoodydah, near Jeddah.

Yours truly,

(Signed)

HAJEE AHMED KHANE SARTEEP.

In order to judge properly of the above instances, it is desirable to note some in which meteorites have been treated with no regard at all.

Some of the most remarkable are those of the meteorites of Kiowa County, Kansas, which, until their meteoric nature was discovered, were put to all sorts of base uses. They were used to hold down stable roofs and covers to rain-barrels, and were buried by hogs and struck by mowing-machines. In fact, they were considered general nuisances. The Staunton County, Virginia, meteoric iron, when first found, a colored man tried to sell for a dollar. Being unable to do this, he threw it into a back yard, where it remained until it was built into a stone wall. There a dentist discovered it, and found it very useful to hammer metals and crack nuts on. Then it was built into the curbing of a cistern. There its meteoric nature was discovered, and it has since occupied a more worthy place. The Tucson, Arizona, iron, in many respects one of the most remarkable meteorites in the world, for many years served as a public anvil in the town of Tucson. In many other instances meteorites have been used for anvils, for nut-crackers, and weights, and one served for many years as a base in a stamp mill.

It is evident, therefore, that the regard in which meteorites have been held depends wholly on whether their fall was observed or not. It was always the fall and the phenomena attending it which impressed the observer, and not any peculiarity in the stone, if found alone. To the finding of a piece of peculiar stone or even metal the average man attached little importance, and used the mass for whatever purpose it proved most serviceable. When, however, he saw a stone fall from the sky, often with terrifying phenomena, all his feelings of awe and reverence were aroused, and he often set the stone up as an object of worship, or regarded it as possessing magic qualities. The instances prove that such a feeling of awe was not confined to savage peoples, but has often been shared by those possessing a high degree of civilization. Indeed, the degree of regard in which the object was held was apparently the more intense the higher the degree of civilization. The worship of these bodies by the Romans was evidently far more elaborate and enduring than that by any other people.

In striking contrast to this worship of sky stones by the Romans have been the incredulity and scorn with which, up to the beginning

of the present century at least, the accounts of the fall of stones from the sky have been treated by modern civilized peoples. They have generally refused to believe that stones could fall from the sky, and have echoed the remark of President Jefferson when told that Professors Silliman and Kingsley, of Yale, had described a shower of stones as having taken place at Weston, Conn. "They may be right," he said, "but it is easier for me to believe that two Yankee professors would lie than to believe that stones would fall from heaven."

The true mental attitude is undoubtedly to be found between the two extremes thus indicated. While the intelligent man no longer regards the stone as a god, he is convinced that it is a messenger from space, a patient and even reverential study of which will disclose to him not a few of the secrets of the universe.

Oliver C. Farrington.

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